CLAIMS

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is as follows:

1. A method of operating a charged particle beam tool, said method including steps of

dithering a shadow pattern relative to and within a charged particle beam, and

detecting incidence of said shadow pattern on a sparse array of targets.

2. A method as recite in claim 1 wherein said dithering step includes steps of

imposing said shadow pattern on said charged particle beam,

deflecting said charged particle beam in a dither pattern, and

passing said charged particle beam through a shaping aperture.

3. A method as recited in claim 1, including the further steps of

passing said charged particle beam through a first shaping aperture,

deflecting said charged particle beam, and

intercepting a portion of said charged particle beam with a second shaping aperture while shaping a remainder of said charged particle beam passed through said second shapiong aperture.

4. A method as recited in claim 2, including further steps of

deflecting said charged particle beam, and

intercepting a portion of said charged particle beam with a second shaping aperture while shaping a remainder of said charged particle beam passed through said second shapiong aperture.

5. A method as recited in claim 1, wherein said detecting step includes steps of

projecting a portion of said charged particle beam on a target including fiducial marks of scintillating material, and

detecting reduction in light output when said dithered shadow pattern is incident on one or more of said fiducial marks.

6. A method as recited in claim 1, wherein said dithering step is performed by moving said shadow pattern in a repeated pattern having a repetition time.

7. A method as recited in claim 6, wherein said repetition time is similar to a spot exposure time.

8. A method as recited in claim 6, wherein said repeated pattern is a raster.

9. A method as recited in claim 6, wherein said repeated pattern is an angled shape.

10. A method as recited in claim 9, wherein said angled shape is retraced with an offset.

11. A method as recited in claim 5, wherein said dithering step is performed by moving said shadow pattern in a repeated pattern having a repetition time.

12. A method as recited in claim 11, wherein said repetition time is similar to a spot exposure time.

13. A method as recited in claim 11, wherein said repeated pattern is a raster.

14. A method as recited in claim 11, wherein said repeated pattern is an angled shape.

15. A method as recited in claim 14, wherein said angled shape is retraced with an offset.

16. A charged particle beam lithography tool including

a source of a beam of charged particles

means for causing a shadow pattern within said charged particle beam,

means for dithering said shadow pattern,

means for shaping said charged particle beam,

means for deflecting said charged particle beam to a desired location on a target including fiducial marks,

means for detecting when said dithered shadow pattern is incident on said fiducial marks, and

means for generating a correction for said means for deflecting in response to said means for detecting.

17. A charged particle beam lithography tool as recited in claim 16, wherein said fiducial marks comprise scintillating material.

18. A charged particle beam lithography tool as recited in claim 17, wherein a pattern of said fiducial marks correspond to said shadow pattern referred to a target.

19. A charged particle beam lithography tool as recited in claim 16, wherein said beam including said shadow pattern is dithered prior to passing through said means for shaping.

20. A method of operating a charged particle beam lithography tool including steps of

causing a moving shadow pattern within a shaped or patterned charged particle beam,

deflecting said shaped or patterned charged particle beam to a desired location on a target, and

correcting said deflecting step based on a time of incidence of said moving shadow pattern on fiducial marks on said target.